

## CLAIMS

What is claimed is:

- 1 1. A computer-system comprising:  
2 a central processing unit (CPU); and  
3 a cache memory, coupled to the CPU, including:  
4 a main cache having a plurality of cache lines that are compressible  
5 to store additional data; and  
6 a plurality of storage pools to hold a segment of the additional data  
7 for one or more of the plurality of cache lines that are to be compressed.
- 1 2. The computer system of claim 1 wherein each of the plurality of storage  
2 pools include a plurality of fixed width storage fields.
- 1 3. The computer system of claim 1 wherein the plurality of cache lines are  
2 included within a plurality of sets.
- 1 4. The computer system of claim 3 wherein a storage pool is allocated to  
2 each of the plurality of sets.
- 1 5. The computer system of claim 4 wherein an indicator is associated with  
2 each storage field of a storage pool to indicate a line within one of the plurality of  
3 sets to which a storage field is assigned.
- 1 6. The computer system of claim 3 wherein multiple storage fields within

2 each storage pool is allocated a within one of the plurality of sets.

1 7. The computer system of claim 6 wherein each storage field mapped to one  
2 of the plurality of sets is sorted according to a logical ordering.

1 8. The computer system of claim 3 wherein a storage pool is shared by two  
2 or more of the plurality of sets.

1 9. The computer system of claim 8 wherein an indicator is associated with  
2 each line of a storage pool to indicate which of the plurality of sets to which a  
3 storage field is assigned.

1 10. The computer system of claim 1 further comprising a cache controller  
2 coupled to the cache memory.

1 11. The computer system of claim 10 wherein the cache controller accesses the  
2 cache lines and storage pools in parallel.

1 12. The computer system of claim 11 wherein accessing the cache lines and  
2 storage pools in parallel comprises the cache controller simultaneously  
3 dispatching set bits to the cache lines and storage pools.

1 13. The computer system of claim 11 wherein the cache controller accesses the  
2 cache lines and storage pools serially.

1 14. The computer system of claim 3 wherein a storage pool is shared by all of  
2 the plurality of sets.

1 15. A cache memory comprising:  
2 a main cache having a plurality of cache lines that are compressible  
3 to store additional data; and  
4 a plurality of storage pools to hold a segment of the additional data  
5 for one or more of the plurality of cache lines that are to be compressed.

1 16. The cache memory of claim 15 wherein each of the plurality of storage  
2 pools include a plurality of fixed width storage fields.

1 17. The cache memory of claim 15 wherein the plurality of cache lines are  
2 included within a plurality of sets.

1 18. The cache memory of claim 17 wherein a storage pool is allocated to each  
2 of the plurality of sets.

1 19. The cache memory of claim 18 wherein an indicator is associated with  
2 each storage field of a storage pool to indicate a line within one of the plurality of  
3 sets to which a storage field is assigned.

1 20. The cache memory of claim 17 wherein multiple storage fields within each  
2 storage pool is allocated a line within one of the plurality of sets.

1 21. The cache memory of claim 17 wherein a storage pool is shared by two or  
2 more of the plurality of sets.

1 22. The cache memory of claim 21 wherein an indicator is associated with  
2 each line of a storage pool to indicate which of the plurality of sets to which a  
3 storage field is assigned.

1 23. The cache memory of claim 17 wherein a storage pool is shared by all of  
2 the plurality of sets.

1 24. A method comprising:  
2 compressing one or more of a plurality of cache lines to store additional  
3 data by:  
4 storing a first component of the data in a main cache; and  
5 storing a second component of the data in one or more of a  
6 plurality of storage pools.

1 25. The method of claim 24 wherein the plurality of cache lines are included  
2 within a plurality of sets.

1 26. The method of claim 25 further comprising allocating a storage pool to  
2 each of the plurality of sets.

1 27. The method of claim 26 further comprising associating an indicator with

2 each storage field of a storage pool to indicate a line within one of the plurality of  
3 sets to which a storage field is assigned.

1 28. The method of claim 25 further comprising allocating a storage pool to a  
2 line within one of the plurality of sets.

1 29. The method of claim 28 further comprising mapping each storage field to  
2 one of the plurality of sets.

1 30. The method of claim 29 further comprising associating an indicator with  
2 each line of a storage pool to indicate which of the plurality of sets to which a  
3 storage field is assigned.

1 31. A computer system comprising:  
2 a central processing unit (CPU); and  
3 a cache memory, coupled to the CPU, including:  
4 a main cache having a plurality of cache lines that are compressible  
5 to store additional data; and  
6 a plurality of storage pools to hold a segment of the additional data  
7 for one or more of the plurality of cache lines that are to be compressed;  
8 and  
9 a main memory device coupled to the CPU.

1 32. The computer system of claim 31 wherein each of the plurality of storage  
2 pools include a plurality of fixed width storage fields.

1 33. The computer system of claim 31 wherein the plurality of cache lines are  
2 included within a plurality of sets.